

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



#8208

FOR OGCC USE ONLY

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

Spill Complaint
Inspection NOAV
Tracking No: 2146796

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): _____

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____
API Number: _____	County: _____
Facility Name: _____	Facility Number: _____
Well Name: _____	Well Number: _____
Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): _____

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): _____

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: _____

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	_____	_____
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

REMEDIALTION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Describe how source is to be removed:

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:



Tracking Number:	_____
Name of Operator:	_____
OGCC Operator No:	_____
Received Date:	_____
Well Name & No:	_____
Facility Name & No:	_____

REMEDIATION WORKPLAN (Cont.)

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? Y N If yes, describe:

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: _____	Date Site Investigation Completed: _____	Date Remediation Plan Submitted: _____
Remediation Start Date: _____	Anticipated Completion Date: _____	Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: _____ Signed: _____

Title: _____ Date: _____

OGCC Approved: _____ Title: _____ Date: _____

FREMONT ENVIRONMENTAL INC.

December 7, 2013

Mr. Jacob Evans
Noble Energy
1625 Broadway, Suite 2000
Denver, CO 80202

Subject: **Excavation Report**
 Bohlender D20-4
 API # 05-123-16669
 Weld County, Colorado
 Fremont Project No. C013-062
 Facility #248867

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Excavation Report for the Bohlender D20-4 flow line release in Weld County, Colorado. The enclosed report describes excavation actions to remove impacted soil from the site. Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.

A handwritten signature in blue ink, appearing to read "Paul V. Henahan", with a stylized flourish at the end.

Paul V. Henahan, P.E.
Senior Consultant

Enclosure

EXCAVATION REPORT
NOBLE ENERGY INC.
BOHLENDER D20-4
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C013-062
FACILITY #248867

Prepared by:

Fremont Environmental Inc.
12061 Pennsylvania Street, Suite B-101
Thornton, CO 80241
(303) 956-8714

December 7, 2013

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EXCAVATION REPORT
NOBLE ENERGY INC.
BOHLENDER D20-4
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C013-062

1.0 INTRODUCTION

The purpose of this document is to present information collected during the excavation of petroleum-impacted soil at the Bohlander D20-4 flow line release location in Weld County, Colorado. This three day excavation project was completed between November 14 and November 18, 2013.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Bohlander D20-4 site is located approximately 14 miles east of Platteville, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area approximately ½ mile southeast of the intersection of County Road 51 and County Road 32. The location is further described as the NE ¼ of the NW ¼ of Section 20, Township 3N, Range 64W.

2.2 Site History

The site consists only of the flow line from the Bohlander D20-4 natural gas well; the tank battery and separation equipment were not impacted. This well was drilled in 1993 to a depth of approximately 7,174 feet. Surface impacts were recently identified at the facility during routine operations when stained soil was observed above the buried flow line.

3.0 FIELD ACTIVITIES

Remediation efforts consisted of removal of a section of the flow line as well as excavation of this petroleum-impacted site. Ground water was not encountered in this excavation which had a maximum depth of 20 feet. The soil consisted of topsoil which was underlain by sand to a depth of approximately 20 feet. The excavated area is shown on Figure 2.

Excavation was initiated near the eastern end of the overall dig on November 14, 2013 and continued west adjacent to the buried flow line. As the flow line was uncovered, sections of this pipe were removed to allow continued excavation. After clean soil was observed to the east, soil removal continued to west until all impacted soil was excavated on November 18, 2013.

A total of 810 cubic yards of petroleum impacted soil were removed by BG Oilfield Services Inc. from the location over a three day period. The impacted soil was disposed of at the Waste Management Inc. Buffalo Ridge landfill in Keenesburg, Colorado as non-hazardous waste.

A photoionization detector (PID) was used to field screen soil samples during the excavation. The instrument was calibrated with a 100 ppm isobutylene standard. Based on the field screening results, eight soil samples were collected from the floor and side walls of the excavation to confirm that impacted soil had been removed. The laboratory analyses indicated that all of these samples had concentrations that were less than the Colorado Oil and Gas Conservation Commission (COGCC) limits.

The soil samples had a one day turnaround time from the laboratory. Therefore, if the analysis from a sample indicated that it did not pass the COGCC criteria, additional

excavation could be undertaken the following day (or days) prior to the backfilling of an area. The locations of the soil samples are shown on Figure 2.

The side wall samples were collected as grab samples near the lower/middle portion of the excavation wall at depths ranging from six to 18 feet depending on the floor depths. The depth of the floor was approximately 20 feet directly below the flow line release location but the depth became increasingly shallow with distance from the release location. At the eastern and western extent of the excavation, the depth was approximately six to eight feet. The floor samples were also collected as grab samples from the bottom of the excavation.

The soil samples were analyzed by eAnalytics Laboratory, Inc. of Loveland, Colorado for benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) by EPA method 8260C, and TPH – Diesel Range Organics (TPH-DRO) by EPA method 8015. The laboratory reports and chain-of-custody documentation are included in Appendix A.

A summary of the laboratory data is included in Table 1. This table shows the PID value and laboratory analyses for each soil sample. In addition, a column stating whether the laboratory analyses passed or failed the COGCC limits is provided. The laboratory analyses indicated that all of the eight soil samples collected achieved the COGCC Table 910-1 limits.

A daily summary of the excavation work is provided below:

November 14, 2013 (Day 1) –Excavation of the flow line was initiated near the eastern limit of impact. Excavation continued to the west as clean sidewalls were encountered. Petroleum impacted soil was present to a depth of approximately 18 feet in the

northeastern corner of the overall excavation. The soil consisted of sand throughout the excavation. Ground water was not encountered during the entire project.

One wall samples (1-5') was collected and submitted to the laboratory for analyses. The location of the soil sample is illustrated on Figure 2. The PID values and laboratory analyses are provided on Table 1. Approximately 80 cubic yards of impacted soil were removed using a backhoe and transported to the landfill. The depth of the excavation appeared to be close to the maximum reach of the backhoe; therefore, a track excavator was scheduled to mobilize to the site for completion of the project.

November 15, 2013 (Day 2) - The excavation proceeded north along the flow line and approximately 15 to 20 feet north from the pipeline. Three wall samples (3-15', 5-18', and 6-6') and two floor samples (2-20' and 4-12') were collected and submitted to the laboratory. Approximately 580 cubic yards of impacted soil were removed and transported to the landfill. The location of the soil sample is illustrated on Figure 2. The PID values and laboratory analyses are provided on Table 1.

November 18, 2013 (Day 3, Final Day) – Excavation continued along the south side of the flow line. The depth of the excavation varied from approximately 15 feet at the center of the excavation but became increasingly shallow as the excavation proceeded to the east and west. The depth of the impacted soil on the eastern edge of the overall excavation was approximately six feet whereas the depth was approximately eight feet in the southwestern corner.

Two side wall samples (7-8' and 8-16') were collected and submitted to the laboratory. Approximately 150 cubic yards of impacted soil were removed and transported to the landfill. The locations of the soil samples are illustrated on Figure 2. The PID values and laboratory analyses are provided on Table 1.

4.0 DISCUSSION

As demonstrated by the soil sampling, the petroleum impacted soil was removed from the site by excavation. This was confirmed by the analyses of the soil samples collected from the excavation floor and sidewalls which were below the COGCC Table 910-1 concentrations. Approximately 810 cubic yards of impacted soil were removed and transported to the landfill. Ground water was not encountered in this excavation which had a maximum depth of approximately 20 feet. Therefore, Noble should request a no further action (NFA) determination from the COGCC.

5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**

 For MVA

12/7/13

Date_____

Wayne Austin

Construction Consultant

Reviewed by:



12/7/13

Date_____

Paul V. Henahan, P.E.

Senior Consultant

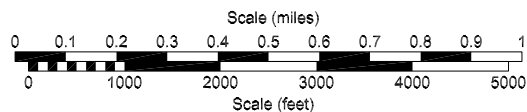
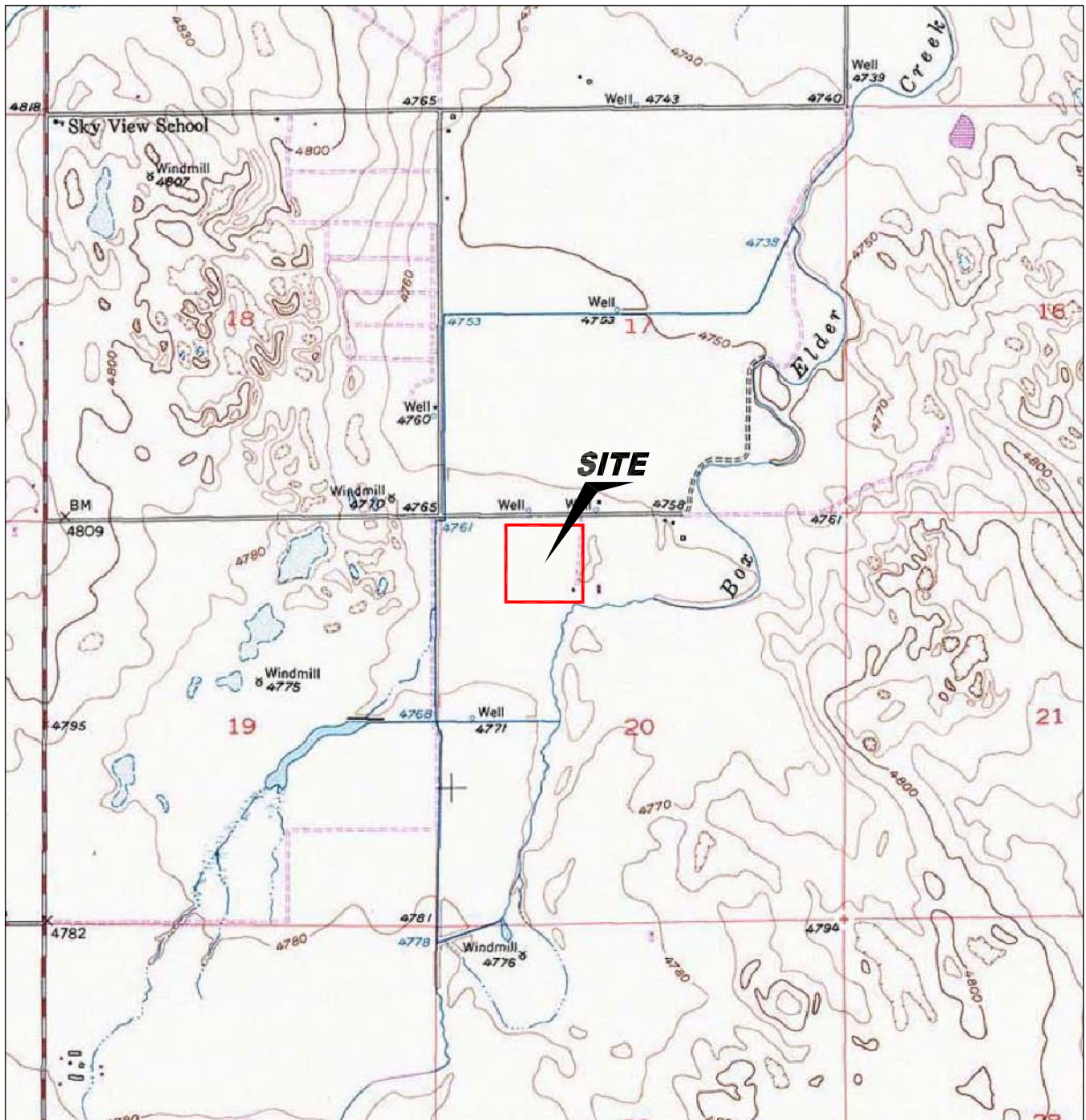
TABLE

TABLE 1
SUMMARY OF SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
BOHLENDER D20-4, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C013-062

Sample	Depth (ft)	Date Sampled	Location	Pass or Fail	PID (ppm)	Benzene mg/kg	Toluene mg/kg	Ethyl-Benzene mg/kg	Xylenes mg/kg	Naphthalene mg/kg	TPH GRO mg/kg	TPH DRO mg/kg
1-5'	5	11/14/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
2-20'	20	11/15/2013	Floor	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
3-15'	15	11/15/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
4-12'	12	11/15/2013	Floor	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
5-18'	18	11/15/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
6-6'	6	11/15/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
7-8'	8	11/16/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
8-16'	16	11/16/2013	Sidewall	Pass	0	<0.01	<0.01	<0.01	<0.01	<0.01	<50	<50
COGCC Table 910 Limits						0.17	85	100	175	23	500	500

Bold faced values exceed the COGCC Table 910-1 concentrations

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Noble Bohlender D20-4
NE NW Section 20, T3N, R64W
Weld County, Colorado

Project No.
C013-062

Prepared by

Drawn by
JMA

Date
10/25/13

Reviewed by

Filename
13062T





LEGEND

---	PIPELINE
X	SOIL SAMPLE LOCATION

Figure 2
SITE MAP

Noble Bohlender D20-4
NE NW Section 20, T3N, R64W
Weld County, Colorado

Project No.
C013-062

Prepared by

Drawn by
JMA

Date
1/13/14

Reviewed by

Filename
13062Q



APPENDIX A

LABORATORY DOCUMENTATION

Certificate of Analysis



November 21, 2013

Client: Fremont Environmental
PO Box 1289
Wellington CO 80549

Project: Bohlender 20-4

Lab ID: 301

Date Received: 11/18/13

Number of Samples Received: 8

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

Analysis	EPA Method	Lab ID on COC
BTEX / Nap	8260C	1 - 8
TPH - GRO/DRO	8260C/8015C	1 - 8

All quality control analyses associated with the requested analyses were satisfactorily passed before the samples were run. If you have any questions please give us a call, we are happy to help.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you, we truly appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea
Laboratory Manager

eAnalytics Laboratory
(970) 667-6975
info@eAnalyticsLab.com



A2LA & Department of Defense (DoD) Certified

Certificate of Analysis

Chain of Custody

eANALYTICS
LABORATORY

November 21, 2013

Chain of Custody Form

eANALYTICS LABORATORY				1767 Rocky Mountain Avenue Loveland CO 80538 Phone: (970) 667-6975 Fax: (970) 669-0941 www.eAnalyticsLab.com								
CLIENT INFORMATION (*New Clients please fill out completely)				ANALYSIS INFORMATION (Select analysis by checking box on corresponding sample line)								
Company: Fremont Environmental				Number of Containers	Matrix: (S) Soil (W) Water (V) Vapor (O) Other	BTEX (EPA 8260)	BTEX Naphthalene (EPA 8260)	TPH - GRO/DRO (EPA 8260/8015)	SAR (US Dept of Ag Method 20B)	EC (US Dept of Ag Method 3)	pH (EPA 9045D)	Other Analysis
Project: Bohlander 20-4												
Project Manager: Paul Henahan												
Sampler: Mark Taylor												
Phone/Email: paulh@fremontenv.com												
Address: P.O. Box 1289 Wellington CO 80549												
Lab ID	Sample Name	Sampling Date/Time										
01	1-5'	11/18	AM / PM	1	S		X	X				
02	2-20'	11/18	AM / PM	1	S		X	X				
03	3-15'	11/18	AM / PM	1	S		X	X				
04	4-12'	11/18	AM / PM	1	S		X	X				
05	5-18'	11/18	AM / PM	1	S		X	X				
06	6-6'	11/18	AM / PM	1	S		X	X				
07	7-8'	11/18	AM / PM	1	S		X	X				
08	8-16'	11/18	AM / PM	1	S		X	X				
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									
			AM / PM									

Comments:

Turnaround Time (Business Days) TAT begins when sample is received by eANALYTICS <input checked="" type="radio"/> Normal (5-10 Days) <input type="radio"/> 3 Day (1.25x) <input type="radio"/> 2 Day (1.5x) <input type="radio"/> 1 Day (2x) <input type="radio"/> Same Day (3x) Rush analysis requires an extra charge. If possible please inform eANALYTICS in advance for rush analysis.		Record of Custody Relinquished by: Mark Taylor Company: Fremont Environmental Received by: _____ Company: _____		Date: 11/18 Time: 1028 AM / PM
For eANALYTICS Use Samples Received Intact: Yes <input checked="" type="radio"/> No <input type="radio"/> Received Within Temperature Range (2-6°C): Yes <input checked="" type="radio"/> No <input type="radio"/> Sample Preservative: Ice <input type="radio"/> None <input checked="" type="radio"/> Acid <input type="radio"/> Other <input type="radio"/>		Relinquished by: _____ Company: _____ Received by: Todd Rhea Company: eANALYTICS		Date: 11/18/13 Time: 1028 AM / PM

WO # 301

eANALYTICS: Environmental testing made Easy

Page 1 of 1

eANALYTICS
LABORATORY

November 21, 2013

EPA Method: 8260C BTEX / Nap
8260C/8015C TPH - GRO/DRO

[illegible]

eANALYTICS
LABORATORY

November 21, 2013

Project: Bohlender 20-4

EPA Method: 8260C

eAnalytics Laboratory: 1767 Rocky Mountain Avenue Loveland CO 80538
The results contained within this report relate only to the items analyzed

